AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method ~~for creating a neural network based on a plurality of training cases, for the detection~~ of detecting medical events in a medical instrument ~~from a record of instrument feature values~~, comprising:

collecting ~~the~~ a plurality of training cases in the medical instrument, wherein each training case has an input state indicative of at least a portion of a first biomedical signal of a particular patient and a corresponding output value indicative of a medical condition of the particular patient;

~~constructing the neural network based on the training cases; and~~

~~training the~~ generating a neural network in the medical instrument based on the plurality of training cases;

receiving a second biomedical signal of the particular patient in the medical instrument;

applying the second biomedical signal to the generated neural network to generate an output of the neural network; and

identifying a condition of the particular patient based the output of the neural network.

2. (Currently Amended) The method of claim 1, wherein ~~the step of~~ collecting the plurality of training cases further comprises:

selecting a plurality of time epochs from a record of instrument feature values; and

indicating an output value for each selected time epoch.

3. (Currently Amended) The method of claim 2, wherein ~~the step of~~ collecting the plurality of training cases further comprises:

selecting a configuration of instrument features; and wherein ~~the step of~~ constructing the neural network based on the training cases comprises:

defining the neural network topology based on the input values and output values of the plurality of training cases; and

determining a kernel width value.

4. (Currently Amended) The method of claim 3, wherein ~~the step of~~ training the neural network includes determining an optimal kernel width value by minimizing prediction error of the neural network.

5. (Currently Amended) The method of claim 4, wherein ~~the step of~~ training the neural network further comprises:

determining an optimal input feature kernel width value for each input feature based on the determined optimal kernel width value.

6. (Original) The method of claim 3, wherein the neural network is a probabilistic neural network.

7. (Original) The method of claim 3, wherein the neural network is a generalized regression neural network.

8. (Original) The method of claim 3, wherein determining the kernel width value is based on a population statistic of the plurality of training cases.

9. (Original) The method of claim 8, wherein determining the kernel width value is based at least in part on the mathematical term of the number of training cases raised to an exponent power of about negative one-fifth.

10. (Original) The method of claim 9, wherein determining the kernel width value is based on the population distribution of the plurality of training cases.

11. (Original) The method of claim 10, wherein the population distribution of the plurality of training cases is approximately Normal.

12. (Currently Amended) The method of claim 3, further comprising normalizing the input values of the plurality of training cases based on the standard deviation for each input feature, and wherein ~~the step of~~ determining the kernel width value comprises defining the kernel width value to be a number in the range 0.1 to 1.0.

13. (Original) The method of claim 3, wherein collection of the plurality of training cases further comprises:

normalizing the input values of the plurality of training cases based on the standard deviation for each input feature.

14. (Currently Amended) ~~A~~ The method of Claim 1, wherein generating the neural network comprises a method for compressing a the neural network, and wherein compressing the neural comprises: ~~comprising:~~

determining a plurality of partitions based on the pattern layer nodes of the neural network wherein each partition comprises a plurality of groups of pattern layer nodes;

selecting one of the plurality of partitions based on a partition metric; and

for each group of pattern layer nodes within the selected partition:

replacing the group of pattern layer nodes with a compressed pattern layer node; and

adjusting the link weights between the compressed pattern layer node and any summation layer nodes to reflect the number of replaced pattern layer nodes.

15. (Currently Amended) The method of claim 14, wherein the partition metric comprises determining a ~~HIC~~ BIC value for each partition.

16. (Currently Amended) The method of claim 15, wherein the partition metric comprises selecting the maximum ~~HIC~~ BIC value.

17. (Original) The method of claim 14, wherein the partition metric comprises determining an error value for each partition.

18. (Original) The method of claim 14, wherein the partition metric comprises determining a compression ratio for each partition.

19. (Original) The method of claim 14, wherein the partition metric comprises determining a Minimum Description Length for each partition.

20. (Currently Amended) The method of claim 14, wherein the partition metric comprises determining a ~~HIC~~ BIC value, an error value, and a compression ratio value for each partition.

21. (Original) The method of claim 20, wherein the K-means clustering method is applied to determine a plurality of partitions.

22. (Original) The method of claim 20, wherein the hierarchical clustering method is used to determine the plurality of partitions.

23. (Original) The method of claim 22, wherein the step of determining a plurality of partitions comprises applying the hierarchical clustering method to create partitions containing between about 1 and about 20 groups.

24. (Original) The method of claim 14, wherein selecting one of the determined plurality of partitions based on a partition metric comprises:

determining, for each partition within the determined plurality of partitions, a centroid value for each group of pattern layer nodes within that partition.

25. (Original) The method of claim 24, wherein selecting one of the determined plurality of partitions based on a partition metric further comprises:

determining, for each partition within the determined plurality of partitions, a covariance value for each group of pattern layer nodes within that partition.

26. – 30. (Canceled).

31. (Currently Amended) A method ~~for~~ of incrementally updating a neural network based on correcting a prediction error, comprising:

applying the neural network in an electronic device to generate a first output value ~~based on~~ indicative of a classification of a first input state;

detecting a first prediction error in the first output value;

creating a first training case based on the first input state wherein the first training case corrects the first prediction error;

reconfiguring the neural network ~~based on~~ to correctly classify the first training case without retraining the neural network; and

applying the neural network to generate a second output value from the electronic device ~~based on~~ indicative of a classification of a second input state.

32. (Original) The method of claim 31, wherein reconfiguring the detection module further comprises adding a first pattern layer node to the neural network based on the first training case.

33. (Currently amended) ~~A~~ The method of claim 31 ~~for updating a detection module configured to classify input states into event classes~~ wherein the ~~detection module~~ neural network is initially incapable of correctly classifying a first input state~~, comprising:~~

~~creating a training case, by selecting a second input state and associating it with an event class; and~~

~~reconfiguring the detection module in real-time to correctly classify the first input state based on the training case.~~

34. (Canceled).

35. (Canceled).

36. (Canceled).

37. (Currently Amended) ~~A~~ The method of claim 31, wherein reconfiguring the network comprises: ~~for updating a detection module in real-time based on correcting a classification error, comprising:~~

applying ~~the~~ a detection module to classify a the first input state into a first event class;

~~detecting~~ determining that the detection module incorrectly classified the first input state into the first event class;

creating a the first training case by associating the first input state with a second event class; and

reconfiguring the detection module in real-time based on the first training case.

38. The method of claim 31 ~~38~~, wherein ~~the user receives the training case from a server~~ wherein the second output from the electronic device comprises at least one of a display or a sound.

39. The method of claim 31 ~~38~~, wherein ~~the user receives the training case from a server~~ wherein the first and second input states are indicative of a biomedical signal of at least one patient and wherein the first and second output values are indicative of a medical condition.

40. – 81. (Canceled).

82. (New) A method of detecting medical conditions in a patient, the method comprising:

receiving a biomedical signal of a particular patient;

identifying a portion of the signal that is indicative of a medical condition of the patient based on user input; and

generating a predictive model for identifying a subsequent medical condition of the patient based on an additional biomedical signal of the patient.

83. (New) The method Claim 82, wherein the biomedical signal comprises an electro-encephalogram.

84. (New) The method Claim 82, wherein the medical condition of the patient comprises a seizure.

85. (New) The method of Claim 82, wherein generating the predictive model comprises training a neural network.

86. (New) The method of Claim 82, wherein identifying the portion of the signal comprises:

at least partially displaying the signal; and

displaying at least one user control for selecting the identified portion of the signal.

87. (New) The method of Claim 82, wherein identifying the portion of the signal comprises identifying a instrument feature of the signal.

88. (New) The method of Claim 82, further comprising:

applying a second biomedical signal of the patient to the generated model to generate an output of the model; and

identifying the medical condition of the patient based on the output of the model.

89. (New) A system for detecting medical events from a record of instrument feature values, comprising:

a memory configured to store a plurality of training cases, wherein each training case has an input state indicative of at least a portion of a first biomedical signal of a particular patient and a corresponding output value indicative of a medical condition of the particular patient; and

a processor configured to:

generate a neural network based on the plurality of training cases;

receive a second biomedical signal of the particular patient;

apply the second biomedical signal to the generated neural network to generate an output of the neural network; and

identify a condition of the particular patient based the output of the neural network; and

an output device configured to output data indicative of the identified medical condition.

90. (New) The system of Claim 89, wherein the biomedical signal comprises an electro-encephalogram.

91. (New) The system of Claim 89, wherein the medical condition of the patient comprises a seizure.

92. (New) The system of Claim 89, wherein the output device comprises a display.

93. (New) A system for detecting medical events from a record of instrument feature values, comprising:

means for storing a plurality of training cases, wherein each training case has an input state indicative of at least a portion of a first biomedical signal of a particular patient and a corresponding output value indicative of a medical condition of the particular patient; and

means for processing, said processing means configured to:

generate a neural network based on the plurality of training cases;

receive a second biomedical signal of the particular patient;

apply the second biomedical signal to the generated neural network to generate an output of the neural network; and

identify a condition of the particular patient based the output of the neural network; and

means for outputting data indicative of the identified medical condition.

94. (New) The system of Claim 93, wherein the biomedical signal comprises an electro-encephalogram.

95. (New) The system of Claim 93, wherein the medical condition of the patient comprises a seizure.

96. (New) The system of Claim 93, wherein the outputting means comprises a display.

97. (New) The method of Claim 1, wherein the biomedical signal comprises an electro-encephalogram.

98. (New) The method of Claim 1, wherein the medical condition of the patient comprises a seizure.

99. (New) A computer readable medium comprising instructions that when executed cause a processor to perform a method of detecting medical events, the method comprising:

collecting a plurality of training cases in the medical instrument, wherein each training case has an input state indicative of at least a portion of a first biomedical signal

of a particular patient and a corresponding output value indicative of a medical condition of the particular patient;

generating a neural network in the medical instrument based on the plurality of training cases;

receiving a second biomedical signal of the particular patient in the medical instrument;

applying the second biomedical signal to the generated neural network to generate an output of the neural network; and

identifying a condition of the particular patient based the output of the neural network.